Volunteer Lake Assessment Program Individual Lake Reports

SAND POND, MARLOW, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	827	**Max. Depth (m):**	21.6	**Flushing Rate (yr^{-1}):**	0.4
Surface Area (Ac.):	159	**Mean Depth (m):**	6.4	**P Retention Coef:**	0.76
Shore Length (m):	3,500	**Volume (m^3):**	4,150,000	**Elevation (ft):**	1543

TROPHIC CLASSIFICATION

Year	Trophic class
2004	OLIGOTROPHIC
2008	OLIGOTROPHIC

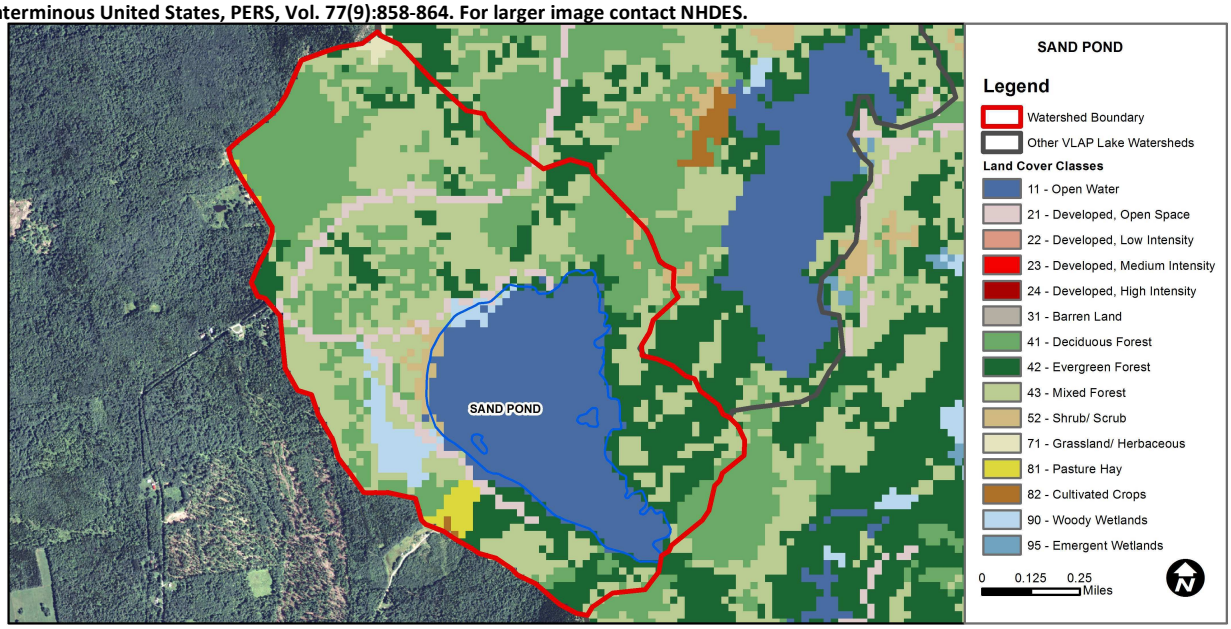
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

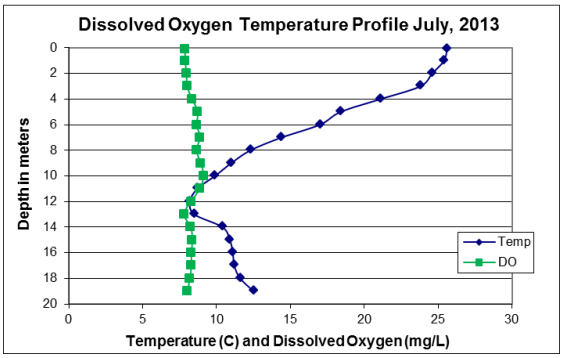


Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	21.8	Barren Land	0	Grassland/Herbaceous	0.28
Developed-Open Space	3.84	Deciduous Forest	23.26	Pasture Hay	1.05
Developed-Low Intensity	0	Evergreen Forest	15.11	Cultivated Crops	0.09
Developed-Medium Intensity	0	Mixed Forest	29.11	Woody Wetlands	2.69
Developed-High Intensity	0	Shrub-Scrub	1.21	Emergent Wetlands	0

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
SAND POND, MARLOW, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were low and stable throughout the summer and much less than the state median. Historical trend analysis indicates stable chlorophyll with low variability since 2000.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity levels were very low and much less than the state median. Historical trend analysis indicates significantly decreasing (improving) epilimnetic conductivity since monitoring began. We hope to see this continue!
- **E. COLI:** Launch Inlet E. coli levels were very low in June following a significant rain event which is good news.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were low throughout the summer and much less than the state median. Historical trend analysis indicates stable epilimnetic phosphorus with low variability since 2000. Launch Inlet phosphorus was elevated in June and July, and Spaulding Inlet phosphorus was elevated in June. Stormwater runoff from significant rainfall in June may have contributed to the elevated phosphorus levels.
- **TRANSPARENCY:** Transparency was lowest in June following a month of above average rainfall and high water levels, but improved as the summer progressed. Historical trend analysis indicates relatively stable transparency with moderate variability since 2000.
- **TURBIDITY:** Deep spot turbidity was low throughout the summer. Tributary turbidity was low except for Launch Inlet and Spaulding Inlet in June. Significant storm events prior to sampling in June likely contributed to elevated turbidities.
- **PH:** Deep spot and tributary pH levels were lower than desirable and potentially critical to aquatic life. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability since 2000.
- **DISSOLVED OXYGEN:** Dissolved oxygen levels were high throughout the water column and sufficient to support aquatic life.
- **RECOMMENDED ACTIONS:** Total phosphorus and turbidity levels were elevated in Launch and Spaulding Inlets in June following significant storm events. Identify potential areas of erosion or phosphorus pollution in the sub-watersheds during or after storm events. Implement best management practices where possible to capture and infiltrate stormwater runoff before it enters tributaries and the lake. DES' "Homeowner's Guide to Stormwater Management" is a good resource as well as the U.S. Forest Service's "Environmentally Sensitive Road Maintenance for Dirt and Gravel Roads".



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Table 1. 2013 Average Water Quality Data for SAND POND

Station	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Allen Inlet			17.9		3			0.15	5.49
Briggs Inlet			17.9		8			0.53	5.70
Epilimnion	1.43	2.55	16.8		6	7.75	8.17	0.53	6.01
Metalimnion			17.5		5			0.79	5.81
Hypolimnion			18.2		6			0.39	5.64
Launch Inlet			22.0	8	49			2.17	4.92
Outlet In Stream			16.2		9			0.37	6.23
Spaulding Inlet			19.9		15			1.44	5.49

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
Conductivity	Improving	Data significantly decreasing.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.